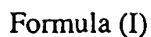


1. Use of a compound according to Formula (I),



A denotes an anion selected from the group of chloride, bromide, iodide, hydrogenphosphate( $\text{HPO}_4^{2-}$ ), dihydrogenphosphate ( $\text{H}_2\text{PO}_4^-$ ), sulphate, thiosulphate, hydroxy and/or oxalate.

**k** denotes an integer 1, 2, 3, 4 or 5;

B denotes an alkandiyl bridge  $(CH_2)_n$ ; wherein

**n** denotes an integer 1, 2, 3, 4, 5, 6, 7, 8, 9 or 10;

R<sub>1</sub>, R<sub>3</sub> and R<sub>4</sub>, which may be identical to one another or different, denote hydrogen, straight-chained or branched C<sub>1</sub>-C<sub>6</sub>-alkyl, C<sub>1</sub>-C<sub>6</sub>-alkenyl, C<sub>1</sub>-C<sub>6</sub>-alkynyl;

**R<sub>2</sub>** denotes straight-chained or branched C<sub>8</sub>-C<sub>20</sub>-alkyl, C<sub>8</sub>-C<sub>20</sub>-alkenyl, C<sub>8</sub>-C<sub>20</sub>-alkynyl;

R<sub>5</sub> denotes for k=1  
straight-chained or branched C<sub>8</sub>-C<sub>20</sub>-alkyl, C<sub>8</sub>-C<sub>20</sub>-alkenyl, C<sub>8</sub>-C<sub>20</sub>-alkynyl;

denotes for  $k \geq 1$   
hydrogen, straight -chained or branched  $C_1$ - $C_6$ -alkyl,  $C_1$ - $C_6$ -alkenyl,  $C_1$ - $C_6$ -alkynyl;

R<sub>6</sub> denotes for k=1  
hydrogen, straight -chained or branched C<sub>1</sub>-C<sub>6</sub>-alkyl, C<sub>1</sub>-C<sub>6</sub>-alkenyl, C<sub>1</sub>-C<sub>6</sub>-alkynyl;

denotes for  $k > 1$   
a straight -chained or branched C<sub>8</sub>-C<sub>20</sub>-alkyl, C<sub>8</sub>-C<sub>20</sub>-alkenyl, C<sub>8</sub>-C<sub>20</sub>-alkynyl  
and the repeating unit -B-NR<sub>4</sub>R<sub>6</sub> may be identical to one another or different;

24

2. Use of a compound according to claim 1, wherein

A denotes an anion selected from the group of chloride, bromide, iodide, hydrogenphosphate( $\text{HPO}_4^{2-}$ ), dihydrogenphosphate ( $\text{H}_2\text{PO}_4^-$ ), sulphate, thiosulphate, hydroxy and/or oxalate.

k denotes an integer 1, 2 or 3;

B denotes an alkandiyl bridge  $(-\text{CH}_2)_n$ ; and

n denotes an integer 1, 2, 3, 4, 5 or 6;

$\text{R}_1$ ,  $\text{R}_3$  and  $\text{R}_4$ , which may be identical to one another or different, denote hydrogen or straight-chained or branched  $\text{C}_1$ - $\text{C}_6$ -alkyl;

$\text{R}_2$  denotes straight-chained or branched  $\text{C}_8$ - $\text{C}_{20}$ -alkyl,  $\text{C}_8$ - $\text{C}_{20}$ -alkenyl,  $\text{C}_8$ - $\text{C}_{20}$ -alkynyl;

$\text{R}_5$  denotes for  $k=1$   
a straight -chained or branched  $\text{C}_8$ - $\text{C}_{20}$ -alkyl,  $\text{C}_8$ - $\text{C}_{20}$ -alkenyl,  $\text{C}_8$ - $\text{C}_{20}$ -alkynyl;

denotes for  $k>1$   
hydrogen, straight -chained or branched  $\text{C}_1$ - $\text{C}_6$ -alkyl;

$\text{R}_6$  denotes for  $k=1$   
hydrogen, straight-chained or branched  $\text{C}_1$ - $\text{C}_6$ -alkyl,  $\text{C}_1$ - $\text{C}_6$ -alkenyl,  $\text{C}_1$ - $\text{C}_6$ -alkynyl;

denotes for  $k>1$   
a straight -chained or branched  $\text{C}_8$ - $\text{C}_{20}$ -alkyl,  $\text{C}_8$ - $\text{C}_{20}$ -alkenyl,  $\text{C}_8$ - $\text{C}_{20}$ -alkynyl  
and the repeating unit  $-\text{B}-\text{NR}_4\text{R}_6$  is preferably identical to one another.

3. Use of a compound according to claim 1 or 2, wherein

A denotes an anion selected from the group of bromide, iodide, dihydrogenphosphate ( $\text{H}_2\text{PO}_4^-$ ) and/or thiosulphate;

k denotes an integer 1 or 2;

B denotes for  $k=1$   
an alkandiyl bridge  $-(\text{CH}_2)_n$  wherein  
n represents an integer 2, 3 or 4;

B denotes for  $k=2$   
an ethylenebridge  $-(\text{CH}_2-\text{CH}_2)-$ ;

$\text{R}_1$ ,  $\text{R}_3$  and  $\text{R}_4$ , which are identical to one another, denote  $\text{CH}_3$ ;

$\text{R}_2$  denotes straight-chained  $\text{C}_{10}$ - $\text{C}_{20}$ -alkyl;

- R<sub>5</sub> denotes for k=1  
straight-chained C<sub>10</sub>-C<sub>20</sub>-alkyl and is identical to R<sub>2</sub>;
- denotes for k=2  
CH<sub>3</sub>;
- R<sub>6</sub> denotes for k=1  
CH<sub>3</sub>
- denotes for k=2  
straight-chained C<sub>10</sub>-C<sub>20</sub>-alkyl and is identical to R<sub>2</sub>.
4. Use of a compound according to any one of claims 1 to 3, wherein said compound is part of a liposome further comprising a neutral lipid or lipid like compound.
  5. Use of a compound according to claim 4, wherein said neutral lipid or lipid like compound is dioleoylphosphatidylethanolamine (DOPE) and/or 1,2-dioleoyloxiphosphatidylethanolamine and/or Cholesterol and/or Dioleoyl-phosphatidylcholin (DOPC).
  6. Use of a compound according to any one of claims 1 to 5, wherein said compound comprises a cell targeting component.
  7. Use of a compound according to claim 6, wherein said cell targeting compound is a ligand or ligand-like component for a specific cell surface receptor or nuclear receptor.
  8. Use of a compound according to any one of claims 1 to 7 for in vitro transfection of cell cultures, wherein the DNA/liposome ratio is 0.01µg to 10µg DNA/µg liposome.
  9. Use of a compound according to claim 8, wherein the DNA/liposome ratio is 0.1µg to 1µg DNA/µg liposome.
  10. Use of a compound according to any one of claims 1 to 7 for in vivo transfection, wherein the DNA/liposome ratio is in the range of DNA/liposome (w/w) 2:1 to 1:3 / 1µg to 100mg per kg body weight.
  11. Kit for transfection, characterized in that it comprises a compound as defined in any one of claims 1 to 10.
  12. Kit according to claim 11, characterized in that it further comprises at least one suitable buffer.
  13. Use of a compound according to any one of claims 1 to 12 for the delivery of a nucleic acid, or derivative thereof, into a target cell.
  14. Use of a compound according to claim 13, characterized in that the nucleic acid is single stranded and/or double stranded DNA and/or RNA and/or a DNA/RNA-Hybrid, or derivatives thereof.

15. Use of a compound according to claim 13 or 14, characterized in that the DNA is selected from the group of plasmids, vectors, cDNA, CpG-motifs, and/or oligonucleotides, and the RNA is selected from the group of mRNA, oligonucleotides or ribozymes.
16. Use of a compound according to any one of claims 1 to 15 as a pharmaceutical substance.
17. Use of a compound according to any one of claims 1 to 15 as a prophylactic and/or therapeutic vaccine.